

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Previously presented) A hydrotalcite-like substance prepared by a process comprising:
mixing an acidic solution containing aluminum ions and magnesium ions and an alkaline solution containing alkali; and
subjecting the mixture to water removal or neutralization, without ageing, wherein said hydrotalcite-like substance has a crystallite size of 20nm or less.
2. (Original) The hydrotalcite-like substance according to claim 1, wherein said hydrotalcite-like substance has an average crystallite size of 10nm or less.
3. (Original) A hydrotalcite-like substance having a basal spacing, said basal spacing being 0.85 nm or more in a nitric acid type, while 0.78 nm or more in a carbonic acid type and a chlorine type.
4. (Original) A hydrotalcite-like substance, enabling simultaneous ion adsorption or ion exchange relative to anions under the co-presence of carbonate ions.
5. (Withdrawn – Currently amended) A process for producing a hydrotalcite-like substance according to claim 1, comprising the steps of:
mixing an acidic solution containing aluminum ions and magnesium ions with an alkaline solution containing alkalis to produce a hydrotalcite-like substance; and
subjecting the hydrotalcite-like substance thus produced to water removal or neutralization process without ageing.

6. (Withdrawn) The process for producing a hydrotalcite-like substance according to claim 5, wherein a molar ratio of said aluminum ion to said magnesium ion is in a range of from 1:5 to 1:2.

7. (Withdrawn) The process for producing a hydrotalcite-like substance according to claim 5, wherein said acidic solution contains aluminum compound and/or magnesium compound that are/is not dissolved therein.

8. (Withdrawn) The process for producing a hydrotalcite-like substance according to claim 5, wherein said aluminum ions are provided from at least one aluminum source selected from the group consisting of alumina, sodium aluminate, aluminum hydroxide, aluminum chloride, aluminum nitrate, bauxite, residue left after producing alumina from bauxite and aluminum sludge.

9. (Withdrawn) The process for producing a hydrotalcite-like substance according to claim 5, wherein said magnesium ions are provided from at least one magnesium source selected from the group consisting of brucite, magnesium chloride, magnesium hydroxide, magnesite and calcined magnesite.

10. (Withdrawn) The process for producing a hydrotalcite-like substance according to claim 5, wherein said alkalis are provided from at least one alkali source selected from the group consisting of sodium hydroxide, calcium hydroxide, lime and solidification material for cement.

11. (Withdrawn) The process for producing a hydrotalcite-like substance according to claim 5, wherein said acidic solution and said alkaline solution are essentially free of carbonate ions.

12. (Withdrawn) The process for producing a hydrotalcite-like substance according to

claim 5, wherein said acidic solution is mixed with said alkaline solution at 100 degrees C or lower.

13. (Withdrawn – Currently amended) A process for immobilizing a hazardous substance comprising the step of:

adding a hydrotalcite-like substance according to claim 1 to an object to be immobilized in a manner that the synthesis of the hydrotalcite-like substance occurs directly on the object to be immobilized through the mixing of an acidic solution containing aluminum ions and magnesium ions with an alkaline solution containing alkalis; and
subjecting the mixture to water removal process or neutralization process.

14. (Withdrawn) The process for immobilizing a hazardous substance, according to claim 13, wherein said hydrotalcite-like substance is added to the object to be immobilized after adding alkalis to the object.

15. (Withdrawn) A process for immobilizing a hazardous substance, comprising the step of adding to an object to be immobilized an acidic solution containing aluminum ions and magnesium ions, while mixing with alkalis.

16. (Withdrawn) The process for immobilizing a hazardous substance according to claim 13, wherein a molar ratio of said aluminum ions to said magnesium ions is in a range of from 1:5 to 1:2.

17. (Withdrawn) The process for immobilizing a hazardous substance according to claim 13, wherein said acidic solution contains aluminum compound and/or magnesium compound that are/is not dissolved therein.

18. (Withdrawn) The process for immobilizing a hazardous substance according to

claim 13, wherein said aluminum ions are provided from at least one aluminum source selected from the group consisting of alumina, sodium aluminate, aluminum hydroxide, aluminum chloride, aluminum nitrate, bauxite, residue left after producing alumina from bauxite and aluminum sludge.

19. (Withdrawn) The process for immobilizing a hazardous substance according to claim 13, wherein said magnesium ions are provided from at least one magnesium source selected from the group consisting of brucite, magnesium chloride, magnesium hydroxide, magnesite and calcined magnesite.

20. (Withdrawn) The process for immobilizing a hazardous substance according to claim 13, wherein said alkalis are provided from at least one alkali source at least one selected from the group consisting of sodium hydroxide, calcium hydroxide, lime and solidification material for cement.

21. (Withdrawn) The process for immobilizing a hazardous substance according to claim 13, wherein said acidic solution and said alkaline solution are essentially free of carbonate ions.

22. (Withdrawn) The process for immobilizing a hazardous substance according to claim 13, wherein zeolite and/or bentonite are/is used together with said hydrotalcite-like substance.

23. (Withdrawn) The process for immobilizing a hazardous substance according to claim 22, wherein the object to be immobilized is a contaminated soil polluted with a hazardous substance, wastes containing contaminated water or a hazardous substance, leachate thereof and the like, and said hydrotalcite-like substance is added to the contaminated soil or wastes together with zeolite and/or bentonite.

24. (Withdrawn) The process for immobilizing a hazardous substance according to claim 22, wherein said contaminated soil is covered with a filter layer of zeolite and/or bentonite, and another filter layer of said hydrotalcite-like substance.